

REMARKS

In a final Office Action dated April 15, 2010, claims 1, 3-6, 8, 9, 14-16, 22 and 23 were rejected under 35 U.S.C. § 103(a). In response to the Office Action, claims 1, 16, and 23 are amended and claim 22 is canceled. The application, with pending claims 1, 3-5, 7-16, and 23, including withdrawn claims 7 and 10-13 is in condition for allowance, and notice to that effect is respectfully requested.

Claims 1, 3-6, 8, 9, 14-16, 22 and 23 were rejected as obvious over the combination of O'Connell ("O'Connell", USP 5,678,637) in view of Nielsen ("Nielsen", USP 6,425,537).

Examiner Interview

The Applicant would like to thank Examiner Davis Hwu for his time in discussing the merits of this application with David L. Buck on November 15 and 18, 2010. David L. Buck proposed amendments to claims 1 and 16 and the parties discussed O'Connell and Nielsen. No agreement was reached by the parties as the claims.

Claims Rejections – 35 U.S.C. § 103

"All words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. § 2143.03. With this Amendment, independent claims 1 and 16 have been amended to recite an outlet extending from a central body cavity through a wall of a nozzle body, a distal outer portion of the outlet has an axis that does not intersect or align with a central axis of the cavity. Additionally, the distal outer portion of the outlet has an at least partially tangential orientation with respect to the sidewall. This arrangement imparts/induces both a radial force and a tangential force during a discharge of a fluid/extinguishant therefrom such that a rotational movement of the fluid/extinguishant within a fluid-filled volume about the central body axis results.

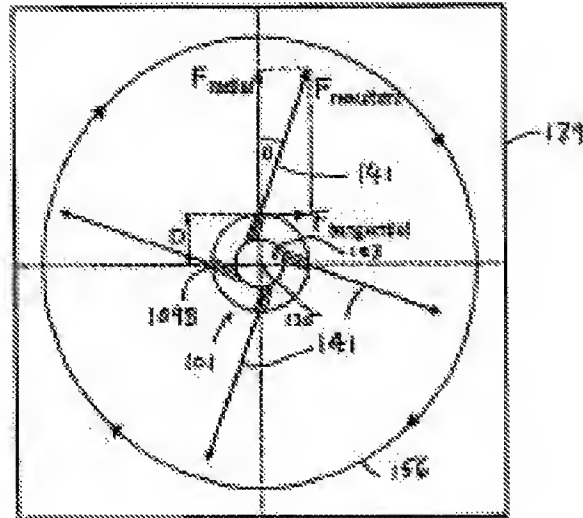


FIG. 4

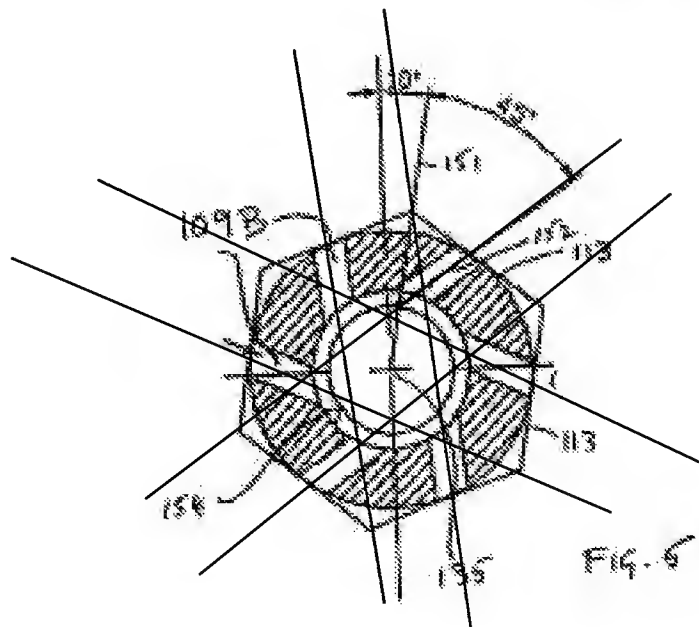
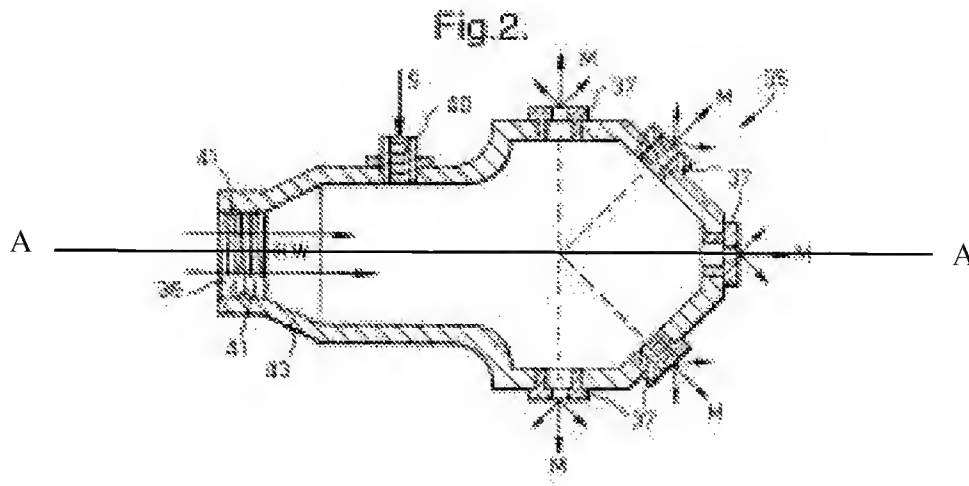


FIG. 5

Applicants' FIGS. 5, 6 and 12, and paragraphs 37-45 of the specification further illustrate and explain this recitation. FIGS. 5 and 6 (reproduced above) and paragraphs 37 and 41-45 are particularly informative. In particular, the Applicants' have modified FIG. 5 above to better illustrate the axis of each outlet 152. These axes do not intersect or align with central cavity axis 135, which extends out of the page to the viewer of FIG. 5. Additionally, the distal outer portion of

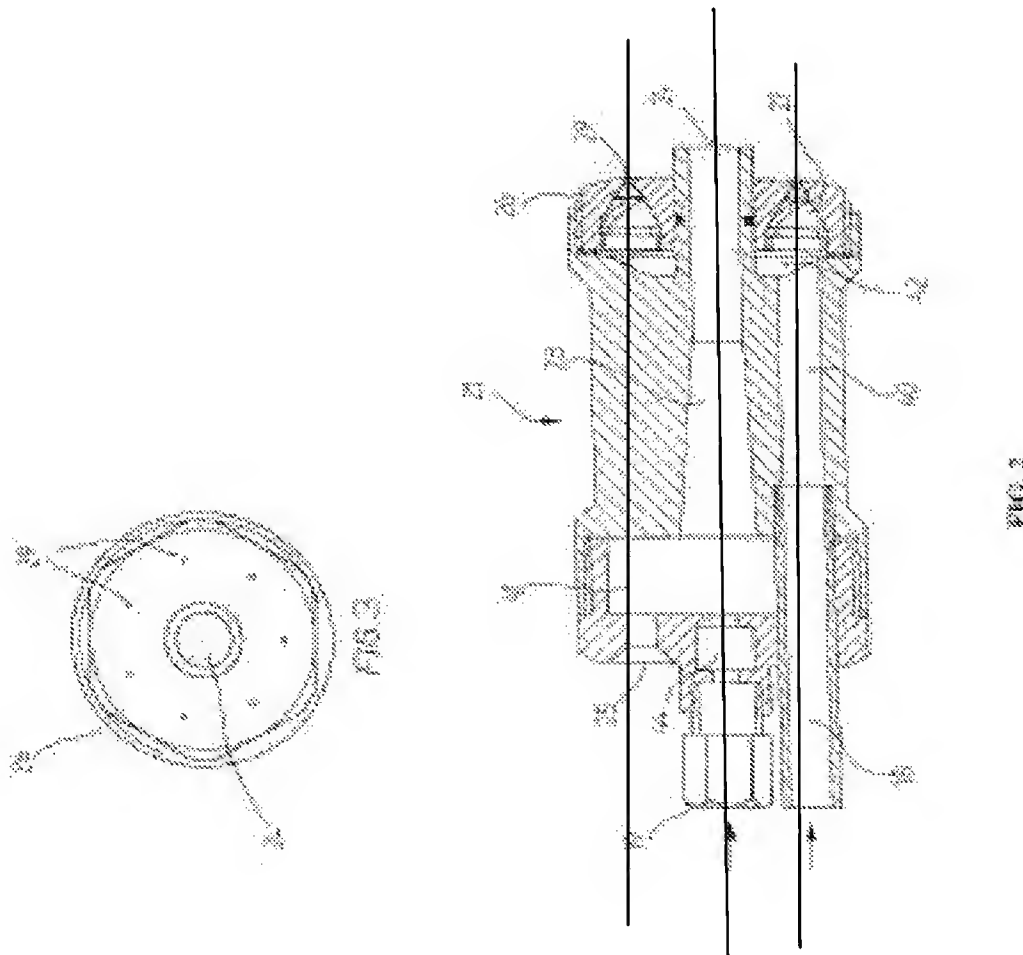
the outlet has an at least partially tangential orientation with respect to the sidewall. This arrangement imparts a tangential force $F_{\text{tangential}}$ during a discharge of a fluid/extinguishant therefrom. The at least partially tangential orientation of the distal outer portion of the outlets with respect to the sidewall results in a $F_{\text{resultant}}$ force being generated at angle theta as shown in Applicants' FIG 6, which induces rotation of the fluid/extinguishant about the central axis cavity 135.

The combination of O'Connell and Nielsen does not disclose these elements. As better illustrated in the modified version of O'Connell's FIG. 2 (reproduced below), O'Connell discloses a nozzle with outlets that have axes that extend to intersect or align with the nozzle's central body (A—A). Additionally, the distal outer portion of the O'Connell outlets do not have an at least partially tangential orientation with respect to the sidewall as claimed by the Applicants. Rather the distal outer portion of the O'Connell outlets extend directly through the sidewall.



Thus, O'Connell has no teaching or suggestion of imparting a tangential force to an extinguishant/fluid in the manner claimed by the Applicants. Additionally, O'Connell fails to teach or suggest inducing rotational movement of the fluid/extinguishant upon discharge from the outlet as claimed by the Applicants.

Nielsen discloses a nozzle head with a plurality of passages for discharging a liquid in atomized form. In particular, helical grooves 35 create internal vortices to atomize the liquid but then liquid passes to openings 29. All the outlets 29 and 24 Nielsen discloses have distal portions (openings 29 and 24) that are aligned with the central axis of the nozzle. (See modified FIG. 2 and FIG. 3 of Nielsen reproduced below). Thus, as illustrated below, the axes of the distal outer portion of Nielsen's outlets are aligned to extend with respect to the central axis of the cavity. In contrast, the axes of the outer distal portion of Applicants' outlets do not align with the central axis of the center body cavity. Additionally, the distal outer portion of the O'Connell outlets do not have an at least partially tangential orientation with respect to the sidewall thereof as claimed by the Applicants. Rather, the outlets extend directly through an endwall.



Similar to O'Connell, Nielsen has no teaching or suggestion of imparting a tangential force to an extinguishant/fluid to help induce rotational movement of the fluid/extinguishant upon exit from the outlet as claimed by the Applicants. Indeed, Nielsen teaches internally rotating a liquid layer 37 via helical grooves 35 in the partition wall so as to finely atomize water. There is no disclosure in Nielsen that upon discharge the rotary motion of the atomized water particles would continue or that the water particles would rotate with respect to the central axis cavity as claimed by the Applicants. (See, Neilsen, column 5, lines 9-40).

Because the combination of O'Connell and Nielsen fails to disclose, teach, or suggest all the limitations of independent claims 1 and 16, those claims are allowable, and rejection of those claims under 35 U.S.C. § 103(a) is therefore improper. Claims 3-5, 7-15 and 23 depend from claims 1 and 16, respectively, and are allowable therewith. See M.P.E.P. § 2143.03.

CONCLUSION

Claims 1, 16, and 23 are amended and claim 22 is canceled. In view of the foregoing, pending claims 1, 3-5, 7-16, and 23, including withdrawn claims 7 and 10-13, are in condition for allowance. A notice to that effect is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required under 37 C.F.R. 1.16 and 1.17, or credit any overpayment, to Deposit Account No. 11-0982.

Respectfully submitted,

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